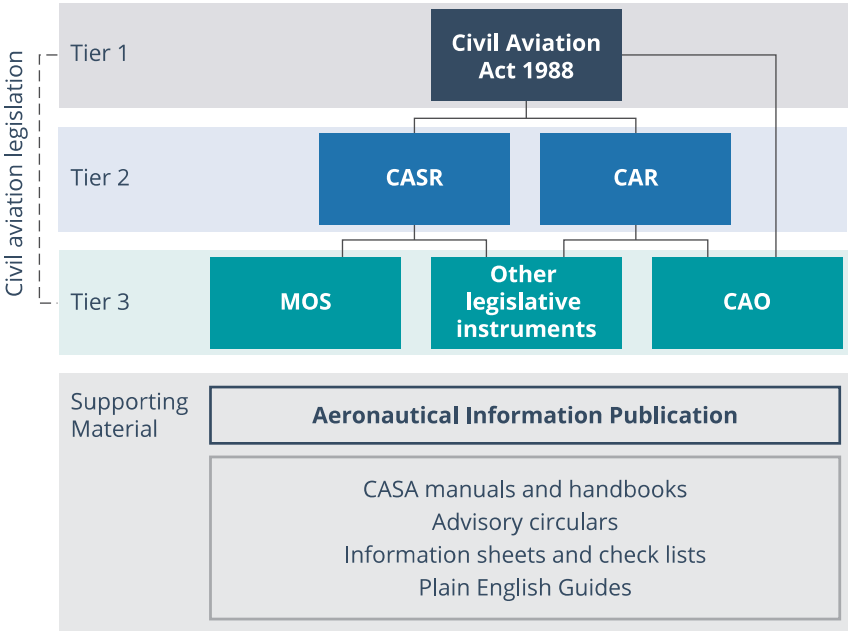
CHAPTER 1
KNOW YOUR RULES AND RESPONSIBILITIES

The structure of the aviation legislation

The structure of the Australian aviation legislation and advisory material is shown below.

Figure: Civil aviation legislation and supporting material



Australian civil aviation legislation is divided into primary and secondary (or delegated) legislation with three-tiers. Secondary or delegated legislation is enabled or authorised by primary legislation.

Tier 1 – Civil Aviation Act and Airspace Act

The *Civil Aviation Act 1988* establishes the Civil Aviation Safety Authority (CASA) and sets out its functions which are chiefly to conduct the safety regulation of (a) civil air operations in Australian territory; and (b) the operation of Australian aircraft outside Australian territory.

The *Airspace Act 2007* makes provision for regulations to be made that provide CASA with both the powers and functions necessary to administer and regulate Australian-administered airspace.

Tier 2 – CAR and CASR

The CAR and CASR are secondary legislation made under the Act and impose regulatory requirements.

The Civil Aviation Regulations 1988 (CAR)

With the gradual expansion of the Civil Aviation Safety Regulations 1998 most CAR will be repealed. However, the CARs will remain for the time being until transferred to the CASR or repealed.

The Civil Aviation Safety Regulations 1998 (CASR)

The CASR will ultimately incorporate most of the CAR. The numbering system for the CASR Parts generally follow the US Federal Aviation Regulations (FAR).

Tier 3 – MOS, CAO and other instruments

Secondary legislation in this third tier expands on the requirements of the CASR and CAR.

Manual of Standards (MOS)

The MOS provide the detail of any standards referred to in the CASR. They have in many cases been developed from the CAO. They also include conditions on AOC's imposed under the Act.

Civil Aviation Orders (CAO)

The CAO's set out the detail of the standards referred to in the CAR. Most will be repealed as additional standards are added to the MOS to support the CASR. Some will remain as CAO to support parts of the CAR that are not repealed or replaced by the CASR.

Other legislative instruments

Other legislative instruments such as directives, approvals or exemptions may be issued from time to time.

Aeronautical Information Publication (AIP)

The AIP is a set of publications provided by Airservices Australia as part of their Aeronautical Information Service (AIS). Information contained in publications of the AIP meet the definition of *authorised aeronautical information*.

The AIP set includes:

- The AIP book
- En Route Supplement Australia (ERSA) containing aerodrome, survival and other operational data
- Departure and approach procedures (DAP East and DAP West) primarily for IFR operations
- AIP Supplement (SUP) advising of temporary changes to the information contained in the AIP, which are published by means of special pages
- Notice to Airmen (NOTAM), a notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations
- Aeronautical Information Circular (AIC), a notice containing information that does not qualify for the publication of a NOTAM, or for inclusion in the AIP, but which relates to flight safety, air navigation, or to technical, administrative or legislative matters
- Terminal area chart (TAC)
- En route charts (High and Low) (ERC-H and ERC-L)

- Planning Chart Australia (PCA)
- World aeronautical charts (WACs), topographical charts at a 1:1,000,000 scale which do not show detail of airspace
- Visual navigation charts (VNC) navigation charts at a 1:500,000 scale with airspace detail
- Visual terminal charts (VTC) simplified topographical charts highlighting features/ structures helpful to visual navigation at a 1:250,000 scale with airspace detail
- Designated Airspace Handbook (DAH), containing the definitive description of Australian administered airspace and listing the volumes of airspace within the current airspace classifications (Classes A, C, D, E and G), protected airspace (prohibited, restricted and danger areas), and air routes, as well as other relevant material.

Supporting material

Supporting material is advisory. Where necessary it adds detail to clarify the legislation to assist in compliance. Supporting material should not introduce requirements that impose an obligation not contained in the legislation. Supporting material can be in the form of manuals, handbooks, guidance documents, information sheets, checklists and kits (such as plain English guides (PEGs). Supporting material is available from the CASA website.

CASA manuals and handbooks

CASA manuals and handbooks set out the underlying administrative policy and procedures to be followed by CASA staff for the benefit of industry participants/ applicants. Administrative policy and procedure should not introduce operational requirements beyond that contained in legislation.

An acceptable means of compliance and guidance material document (AMC/ GM) is a source of supporting information on a particular regulation. Entries in an AMC/GM are generally short and succinct. Guidance materials are developed to enhance a regulated entity's understanding with the implementation of regulations and subsequent complaince.

Advisory circulars

An advisory circular (AC) provides advice and guidance to illustrate a means, but not necessarily the only means, of complying with the regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material. Where the content explains a means of regulatory compliance, this will be clearly identified. ACs have replaced civil aviation advisory publications (CAAPs).

Information sheets and checklists

Compact, succinct information on select topics is published in the form of Information sheets, industry checklists and kits to cover aviation medicine, continuing airworthiness, drug and alcohol management plans, flight crew licensing, fuel requirements and ramp checks.

Plain English guides

Plain English guides (PEGs) are developed to convey complex legislative information in simple, easy-to-read and understandable language. They present a document structure that aligns more closely with operational needs, including digital interactive elements to enhance the overall user experience. PEGs combine regulations and associated MOS into one publication for ease of reference. The ongoing development of PEGs will give both industry and CASA enhanced visibility and a common understanding of the regulatory requirements relevant to each sector.

CASA has published, or is in the process of developing, PEGs for the following regulations:

- Part 91 of CASR – General operating and flight rules
- CAO 48.1 – Fatigue management
- Part 101 of CASR – Micro and excluded remotely piloted aircraft operations
- Part 103 of CASR – Sport and recreation aircraft
- Part 131 of CASR – Balloons and hot air airships.

These documents, and others as they are developed, are available on the CASA website.

Fit to fly

Being fit to fly is a responsibility that rests not only with the operator (where applicable) but with the individual. Determining your fitness to fly requires sound and honest judgement. Illness, medication, illicit drugs, alcohol, stress, fatigue, lack of food and dehydration may affect your ability to fly safely.

Drugs and alcohol

Piloting an aircraft is a safety-sensitive aviation activity and you must comply with the requirements of CASR Part 99 in relation to drugs and alcohol. CASR Part 99 establishes a regime for random drug and alcohol testing conducted for, or on behalf of, CASA of all pilots in Australia.

Over-the-counter or prescribed medication/drugs may reduce your ability to function properly while flying. Search for 'testable drugs' at **casa.gov.au/aod**, or talk to an aviation medical professional.

Alcohol and flying do not mix

Alcohol affects the central nervous system, slowing down messages between the brain and the body. It affects concentration and coordination and slows your ability to respond to unexpected situations. The effect is directly proportional to the concentration of alcohol in the blood. Blood alcohol concentration (BAC) depends on the amount of alcohol consumed and the rate at which your body metabolises it. CASR 91.520 requires that a crew member must not commence their duty if they have consumed alcohol within 8 hours of the flight beginning, or if an alcohol test reveals they have exceeded the permitted level specified in CASR Part 99. However, it may take longer than eight hours for your BAC to return to the Australian permitted level of less than 0.02 grams of alcohol in 210 litres of breath. A BAC of 0.02 can be reached after the consumption of only one standard drink (a middy of beer, a nip of spirits or a small glass of wine). Alcohol is rapidly absorbed into the body, but the process of detoxification is slow; it takes about three hours for the effects of one standard drink to wear off.

Alcohol may help you go to sleep, but it will ruin your rapid eye movement. This causes distraction, slow reaction times and errors of judgement that expose you to hazards you will need to manage, thereby increasing your workload in the cockpit.

Psychoactive substances

Any illicit drug or alcohol is unacceptable. However, many common substances may also present a hazard. Coffee, tobacco and over-the-counter medications are commonly used in Australia and flying at altitude can heighten their effects. Prescription and over-the-counter drugs can impair judgment and affect coordination. Some cold tablets and cough mixtures previously sold over-the-counter are now only available by prescription. But just because a drug is available without a doctor's prescription does not mean it is safe to take in an aviation environment. All illegal drugs are unsafe for flying. The side effects of common drugs such as cold tablets, cough mixtures, antihistamines, appetite suppressors and laxatives can cause drowsiness, confusion, blurred vision and dizziness.

Always seek advice from a doctor or pharmacist before taking more than one drug at a time, as drugs can interfere with each other, or worsen any side effects. Antibiotics and antidepressants can have a pronounced effect on judgment, thinking and coordination. You should ask designated aviation medical examiner (DAME) if it is safe to fly while taking any prescription drug.

Check yourself before flying:

- Do not consume alcohol eight hours before you sign-on.
- Do not fly while under the influence of alcohol.
- Do not fly if you have taken illicit drugs.
- Do not fly while using any drug that may adversely affect safety.
- If in doubt, ask your DAME.
- Consider waiting 24 hours from the last use of alcohol before flying.

Fatigue and its effects

Fatigue is a challenge for anyone who drives, flies, or operates other vehicles or machinery. Pilots from all sectors of the aviation industry are subject to fatigue requirements. Pilots can be their own worst enemy when it comes to recognising whether they are able to continue to perform to a high standard.

Pilots must take steps to manage risks from fatigue, including possibly deciding not to operate an aircraft if they feel that they are unfit or will be unfit to do so as a result of fatigue. There are various obligations for pilots to do this under **Civil Aviation Order 48.1 2019**. CASA's Fatigue Management PEG provides comprehensive information with helpful hints explaining what is expected of pilots and operators, and what might need to be considered when complying with the fatigue management rules.

Warning signs of fatigue include:

- errors of judgment
- forgetfulness
- sleepiness or yawning
- loss of appetite
- aggressiveness or irritability
- inaccurate flying
- deviation from your usual operating standard.

The physiological and psychological effects of fatigue may result in:

- slowed reaction time
- forgotten or missed checklist items
- inaccurate flying
- missed radio calls.

If you are fatigued due to work or other issues, give yourself plenty of time to rest before flying—an early start after a late-night working should be avoided. Also, be aware of the cumulative effect of fatigue; a long period of poor sleep will not be overcome in a single night. Sometimes the excitement of a challenging flight can make it difficult to sleep the night before, especially if you are uncertain of the weather. Making as many decisions as possible the night before about the destination and weather may help you sleep better.

Fatigue, stress, high workload and struggling to stay healthy are constant issues for pilots. Depending on how they are managed, they can be simply daily challenges or an overwhelming problem which adversely affects performance. This VFR Guide provides practical information that pilots can use to stay both physically and mentally fit to fly.

Manage fatigue before flying

As a pilot you need to adopt strategies to better manage your rest and to decrease the effects of fatigue such as:

› planning your activities, meals, rest and sleep patterns during off-duty periods
› making the most of permitted rest breaks, including taking naps
› advising colleagues if you feel drowsy
› alerting colleagues if they appear to be becoming drowsy
› giving your employer feedback on the suitability of overnight accommodation
› eating appropriate meals.

Adequate sleep is the only way for us to minimise fatigue and its negative effects on our performance. An accumulated sleep debt from less-than-usual sleep over several consecutive days needs to be 'paid back' with several days of more-than-usual sleep.

Get a good night's sleep

› Set your alarm clock to wake you at the same time every morning.
› Walk in the morning to reset your melatonin levels.
› Exercise during the day.
› Prepare for sleep at least 90 minutes before you go to bed.
› Avoid watching TV or using your phone and social media in the run-up to bedtime.
› Cut down alcohol consumption late at night.

Licensing

Flight crew licence and medical requirements

(CASR 61.405, 61.410)

You must not exercise any privilege of your licence unless you hold a current aviation medical certificate or, where applicable, an exemption.

There are different types of aviation medical certificates.

- **The Class 1 medical certificate** is the highest of medical standards, as set out in CASR 67.150. A Class 1 medical certificate allows you to fly most commercial operations. A Class 1 medical certificate will also allow you to conduct private and recreational flying operations (CASR 61.415).
- **The Class 2 medical certificate** is a medical standard that allows you to undertake private and recreational flying operations (CASR 61.410). Certain commercial operations, where no passengers are carried, are also allowed with a Class 2 medical certificate.
- **A Basic Class 2 medical certificate** is an alternative to a full Class 2 certificate for private day VFR operations below 10,000 ft above mean sea level (AMSL). It has the following additional operational restrictions:
  - a maximum of five passengers
  - piston engine aircraft
  - maximum take-off weight (MTOW) of less than 8,618 kg
  - no use of operational ratings (e.g. instructor rating, instrument rating)
  - no use of flight activity endorsements (e.g. aerobatics, low level).

You can get a Basic Class 2 examination from any medical practitioner who does medical examinations for commercial motor vehicle drivers. The medical standard is exactly the same as the commercial driver standard (Austroads).

- **The Class 5 medical self declaration** allows recreational pilot licence holders and other licensed pilots conducting private operations to be exempt from holding a medical certificate provided they declare that they are medically fit and comply with the requirements (operational limitations) of the exemption. This declaration can be made at **www.casa.gov.au/licences-and-certificates/aviation-medicals-and-certificates/class-5-medical-self-declaration**.

- **Recreational aviation medical practictioners certificate (RAMPC)**
  A RAMPC is valid if you have a recreational pilot licence but with the following conditions:
  - only single engine piston aircraft (fixed wing or helicopter) with a maximum take-off weight of 1,500 kg or less
  - only day operations under the visual flight rules (VFR) and below 10,000 ft
  - no more than one passenger on board
  - no aerobatic flight.

  If you have a RAMPC you must:
  - meet the Australian Fitness to Drive unconditional private drivers' requirements, and
  - not have any of the disqualifying conditions.

For complete details see the **CASA website**

The period for which a medical certificate remains in force is dependent on your age and the kind of medical certificate in question but may be varied for other reasons (CASR 67.205, 67.210 to 67.220).

Obligation to tell CASA of changes in medical condition (CASR 67.265)

You must not fly if your ability to act efficiently is, or is likely to be, impaired due to illness or injury, no matter how minor it is.

Additionally, if you hold a private pilot licence or radiotelephone operator licence and the impairment lasts for 30 days or more, you must not fly until a DAME certifies that the impairment no longer exists. The above period is reduced to seven days for commercial pilots (CASR 67.265).

Requirements for women during pregnancy relating to their medical certificate validity can be found in CASR 67.235.

Pilot licence

For your pilot licence to remain in effect, your medical certificate must remain valid. For a private pilot licence, you must also meet certain recency requirements (CASR 61.395) and complete a flight review every two years (CASR 61.400). Your pilot licence contains a record of your flight crew licences and categories, of aircraft ratings and endorsements and any operational ratings and endorsements. CASA can, in writing, vary, suspend or cancel your licence if CASA considers the specified grounds in CAR 269 cannot be met.

Student pilot

Flying as a student pilot (CASR 61.112)

A person who does not hold a pilot licence is authorised to pilot an aircraft if:

› the pilot in command of the aircraft is a flight instructor and the flight is for the purpose of receiving flight training

› the flight is for a flight test for a pilot licence, or a rating or endorsement on a pilot licence

› the flight is approved by, and conducted under the supervision of, a flight instructor authorised by a CASR Part 141 or 142 operator to conduct the supervision, and is conducted under VFR, and in accordance with the flight instructor's approval.

A student pilot's flight must be under the supervision of a flight instructor.

The flight instructor must be:

› on board, or

› at the aerodrome from which the flight began (or flying within 15 NM of the aerodrome reference point) and contactable by radio or other electronic means to be able to provide guidance to the student pilot.

General requirements for student pilots (CASR 61.113)

Before a student pilot can fly solo, they must have an aviation reference number (ARN) and be at least 15 years of age.

A student pilot cannot fly an aircraft:

› carrying passengers, or

› which is not registered.

Solo flights – medical requirements for student pilots (CASR 61.114)

A student pilot must not fly solo if they do not hold and carry a copy of:

› a Class 1 or a basic class 2 medical certificate; or a medical exemption.

› a recreational aviation medical practitioner's certificate and CASA's written acknowledgement that they have been provided a copy.

Solo flights – recent experience requirements for student pilots (CASR 61.115) (CASA EX 46/18)

A student pilot not enrolled in an integrated training course may only fly solo if:

- they have conducted a dual instructional flight within the previous 30 days in the same type of aircraft
- their cumulative solo flight time since the last dual instructional flight will not exceed 3 hours.

Student pilots authorised to taxi aircraft (CASR 61.116)

A student pilot may only taxi an aircraft if they have been approved to do so by a flight instructor.

Identity checks (CASR 61.117)

To obtain a student licence, evidence of your identity must be provided to CASA in accordance with the Aviation Transport Security Regulations 2005 6.57 (1) (a).

Production of medical certificates and identification (CASR 61.118)

CASA may direct a student pilot to produce:

- their medical certificate or recreational aviation medical practitioner's certificate unless they hold a medical exemption
- a document with a full-face photograph, including head and shoulders, that was issued within the previous 10 years and that is valid under the government, or a government authority of the Commonwealth or a state or territory, or a foreign country, or a state or province (however described) of a foreign country, and that has not expired or been cancelled.

These documents must be produced within 7 days or before the next solo flight (whichever is earlier).

Recreational pilot licence (CASR 61.475)

To apply to hold a recreational pilot licence, a person must be at least 16 years of age and have:

- passed the appropriate aeronautical knowledge and aircraft category rating examinations
- completed the appropriate flight training for the recreational licence and any associated aircraft category rating
- passed the flight test for the recreational licence and the associated aircraft category rating
- completed at least 25 hours of flight time as pilot of the appropriate aircraft for which the category rating is being sought, including at least:
  - 20 hours of dual flight
  - 5 hours of solo flight time.

The privileges of a recreational pilot licence (CASR 61.460)

A recreational pilot licence allows a person to fly under the VFR in private operations or flight training, as either pilot in command or co-pilot in an aircraft that:

- is powered by a single engine that is not rocket or turbine powered
- is not more than 1,500 kg at maximum certified take-off weight
- is single pilot certified.

The limitations on recreational pilot licence privileges (CASR 61.465, 61.470)

To carry more than one passenger or to fly above 10,000 ft AMSL, a recreational pilot or a person accompanying them must hold a current Class 1 or 2 medical certificate.

With further training, a recreational pilot may obtain the following endorsements (CASR 61.470, CASR 61.485 – 61.500):

- a recreational navigation endorsement to fly:
  - beyond a 25 NM radius of the departure aerodrome
  - beyond the flight training area for an aerodrome
  - along a route between the aerodrome and its flight training area
  - cross country
- the controlled airspace endorsement to fly within controlled airspace
- the controlled aerodrome endorsement to fly at controlled aerodromes
- the flight radio endorsement to operate an aircraft radio.

Private pilot licence

Private operation

An operation of an aircraft is a private operation if the operation is not one of the following:

- an operation that is required to be conducted under the authority of an AOC under Part 119, 129 or 131 or regulation 206 of CAR
- an operation that is required to be conducted under the authority of an aerial work certificate under Part 138
- a Part 141 flight training (within the meaning of Part 141)
- a Part 142 activity (within the meaning of Part 142)
- an adventure flight for a limited category aircraft
- a specialised balloon operation that is conducted for hire or reward
- an operation authorised by a New Zealand AOC with ANZA privileges that is in force for Australia
- an operation under a permission under subsection 25(2) or (3) (non-scheduled flights by foreign registered aircraft) or section 27A (permission for operation of foreign registered aircraft without AOC) of the Act.

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What does a private licence authorise a person to do? (CASR 61.505)

A private licence holder is allowed to fly as pilot in command or co-pilot in private operations or as the pilot in command if they are under training.

General competency requirement (CASR 61.385)

You are only authorised to exercise the privileges of your licence for a class or type rating for the aircraft, including any operational rating or endorsement, if you are competent in operating it to the standards mentioned in the CASR Part 61 MOS, in all of the following areas:

- operating the aircraft's navigation and operating systems
- conducting all normal, abnormal and emergency flight procedures for the aircraft
- applying operating limitations
- weight and balance requirements
- applying aircraft performance data, including take-off and landing performance data, for the aircraft.

You may only operate an airborne collision avoidance system if you are competent in its use to the standards mentioned in the CASR Part 61 MOS.

Regular flight review requirement (CASR 61.400)

If you hold a flight crew rating that is either a class rating or an aircraft type rating, you must undertake a flight review every 2 years to continue to exercise the privileges of your licence. Glider pilot licences are also subject to periodic flight reviews.

You will also need to complete a flight review of any additional ratings you may hold. For example:

- an aerial application rating
- an instructor rating
- an instrument rating or a private instrument rating
- a low level rating
- a night VFR rating
- a night vision imaging system rating.

Please refer to CASR Part 61 and related exemptions for more details.

Recent experience requirements (CASR 61.395)

Before you can carry passengers by day you must have carried out three take-offs and landings in the previous 90 days. By day, if you are not carrying passengers there are no prescribed take-off or landing recency requirements.

Before you can carry passengers at night, you must have conducted three take-offs and landings at night in the previous 90 days.

Before you can fly at night without passengers, you must have conducted at least:

› one night take-off

› one night landing; within the previous 6 months in an aircraft of the same category.

You will be considered to have met the recent experience requirements to carry passengers by day if, in the last 90 days, you have successfully completed and passed a relevant flight check, review or test for a licence or rating, which included at least one take-off and landing. Similarly, if you wish to carry passengers at night, the above experience must have been conducted at night.

Personal logbooks (CASR 61.345 to 61.365)

The holder of a pilot licence or certificate of validation must retain and maintain a personal logbook.

You must record your full name, date of birth and details of each flight you conduct in an aircraft or flight simulator.

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Details of flights include:

- the date the flight began
- the aircraft (or simulator and simulated aircraft) type
- whether it was a single or multi-engine aircraft
- the aircraft's nationality and registration
- the take-off and landing points and each segment of the flight
- the flight time (if any) flown in each of the following capacities
  - pilot in command
  - co-pilot
  - pilot in command under supervision
  - pilot receiving flight training
- whether the flight was by day or night, or both
- any instrument flight time
- whether you performed any instrument approaches and, if so, the type of instrument approach.

You need to retain your logbook for at least 7 years after your last entry and you must ensure that it is unaltered within this time (CASR 61.355). Logbook entries must not be false or misleading (CASR 61.360).

You may be directed by CASA to produce your logbook within 7 days. Electronically formatted logbooks will need to be printed and each page certified as being a true copy (CASR 61.365).

CASA may direct you to correct any logbook errors within 14 days (CASR 61.360).

Production of licence documents, medical certificates and identification (CASR 61.340)

For various reasons, CASA may direct you to produce any or all of the following documents for inspection:

- pilot licence
- aviation medical certificates
- photo identification.

If you are issued with a direction between the time, you are about to fly, to when you have finished flying, you must immediately comply with the direction. However, if it was issued at any other time you have 7 days to comply.

Documents to be carried

Electronic documents (CASR 91.100)

A document required to be carried on a flight may be carried as a copy in electronic form.

Note: For flights that begin or end at an aerodrome outside Australia, you should be aware that electronic copies of documents might not satisfy a foreign country's legal requirements.

Carriage of documents (CASR 91.105)

You must ensure the following documents are carried on your flight:

- for each flight crew member
  - medical certificate (or recreational aviation practitioner's certificate or medical exemption if you are a recreational pilot). These can be physical or electronic copies (EX81/21)
  - flight crew licence (this includes a certificate of validation)
  - passport or photographic ID (that is current and been issued within 10 years of the day of your flight EX81/21) as issued by a Commonwealth, state or territory authority or agency
- the aircraft's flight manual
- the operating instructions for any computerised navigation systems fitted to the aircraft
- the minimum equipment list for the aircraft (if any).

Exception: *You do not have to carry the documents listed, if you are flying aerobatic manoeuvres and carrying the documents would present a risk to the aircraft or its occupants.*

You will meet the requirement to carry photographic ID by carrying your state issued driver's licence or your Aviation Security Identification Card (ASIC).

Carriage of documents for certain flights (CASR 91.110)

You must carry the authorised aeronautical information for the flight, and either the aircraft's flight technical log or its maintenance release.

Exception: *You do not need to carry these documents if you are operating:*

- *under the VFR by day within 50 NM of your departure aerodrome, or*
- *inside a flying training area for an aerodrome, or*
- *on a route to or from a flying training area which is not adjacent to its associated aerodrome.*

Carriage of documents for flights that begin or end outside Australian territory (CASR 91.115)

When your flight begins or ends at an aerodrome outside Australia, you must carry:

- the aircraft's certificate of airworthiness and certificate of registration
- the journey log for the flight (CASR 91.120)
- a list of passengers including their name, place of embarkation and destination
- a manifest and detailed declaration of any cargo carried (other than passenger baggage)
- a copy of the radio licence, if the aircraft has a radio station licence that is an apparatus licence or a class licence
- a copy of any approval or authorisation held by the operator that is relevant to the flight.

If you intend to rely on electronic documents to satisfy this requirement when flying outside Australia then, before your flight, you should check that electronic copies of the required documents will satisfy the laws of a foreign country.

These regulations only apply to the aviation requirements of you flight. Other authorities have laws that you must comply with, such as customs, border security and quarantine.

Civil Aviation Safety Authority

Community service flight (CSF) (AIP GEN2.2)

A CSF is one that involves:

- the transport of one or more individuals (a patient) to a destination for the purpose of each such individual receiving non-emergency medical treatment or services at the destination, or
- the transport of a patient from a destination mentioned above (the treatment destination) to another treatment destination, or
- the transport of a patient from a treatment destination:
  - back to a place from which the patient departed for a treatment destination, or
  - to a destination at which the patient resides, and
- is provided to a patient, and any person who accompanies the patient to provide support and assistance, without a charge being made to any of those persons for their carriage, and
- medical treatment is not provided on board the aircraft for the flight, other than the administering of medication or in response to an unexpected medical emergency, and
- is coordinated, arranged or facilitated by an entity for a charitable purpose or community service purpose.

Requirements for Community Service Flights (CSF) (ENR1.1)

In addition to any other relevant requirements of the civil aviation legislation, the flight must meet the CSF definition above and satisfy the following requirements (where applicable).

Licence requirements

The pilot must hold either a CASR Part 61: Private Pilot Licence (PPL); Commercial Pilot Licence (CPL) or Airline Transport Pilot Licence (ATPL).

Note: A Recreational Pilot Licence (RPL) does not meet the requirement

Aeronautical experience, recency and medical

To conduct a CSF, a pilot must have:

- 400 hours total aeronautical experience and 250 hours as pilot in command, unless the pilot holds a CPL or ATPL
- a current Class 1 or Class 2 medical (not Basic Class 2) certificate
- performed one landing in the same aircraft class (or type, if type rated aircraft) in the past 30 days
- 25 hours experience in flying multi-engine aircraft (if flying multi-engine).

Experience on aircraft type

A CSF pilot must have for:

› IFR – 20 hours on the aircraft type

› VFR –10 hours on the aircraft type.

Note: A CSF at night must be conducted under the IFR. A CSF under Night VFR is not permitted.

Aircraft

It must be:

› A VH-registered aeroplane or helicopter

› not amateur built, and have limited category or an experimental certificate, and

› no longer than 100 hours or 12 months since the last periodic maintenance inspection for those aircraft using the CASA system of maintenance (Schedule 5 of the CAR).

Passengers

› No more than 5 passengers may be carried.

› Passengers must be either patients being transported for the purpose of receiving non-emergency medical treatment or services, or persons accompanying the patient to provide support and assistance to the patient.

Flight notification

› Full flight notification (IFR or VFR), or SARTIME (VFR) is required.

› Remark (RMK)/CSF must be noted in Item 18 of domestic flight notification.

If the flight notification is submitted by radio, then the pilot is required to request air traffic services (ATS) to annotate the flight as a CSF.

Record keeping

› The flight must be annotated as CSF in the pilot logbook.

Pilot responsibilities

Aircraft not to be operated in manner that creates a hazard (CASR 91.055)

You must not operate an aircraft in a manner that creates a hazard to another aircraft, person or property.

CASR 61.385 requires that you must be competent before you fly your aircraft. Although your competence is checked periodically you must always be conversant with aircraft equipment, systems, limitations and performance Seek refresher training if necessary. See **CASR 61.385** for more detail about the limitations on exercising the privileges of your pilot licence.

Mercy flights: There may be times when it is necessary for pilots to not follow aviation safety rules in order to respond to a sudden or extraordinary emergency. You are required to report such breaches to CASA. Please refer to **www.casa.gov.au/operations-safety-and-travel/safety-advice/mercy-fights-and-operating-emergency**.

Crew members to be fit for duty (CASR 91.520)

A crew member must not perform a required duty that is related to the safety of the aircraft, or the persons or cargo on the aircraft, if they are or are likely to be unfit.

An operator must not assign a crew member to duty for a flight if they have reasonable grounds to believe the crew member is, or is likely to be, unfit to perform a duty related to the safety of the aircraft, or the persons or cargo on the aircraft.

A crew member must not commence their duty if they have consumed alcohol within 8 hours of the flight beginning or if an alcohol test reveals that they have exceeded the permitted level of alcohol specified in CASR Part 99.

The permitted level of alcohol is less than 0.02 grams of alcohol in 210 litres of breath.

Certain aviation organisations are required to implement drug and alcohol management plans which apply to all employees performing, or who are available to perform, safety-sensitive aviation activities. CASA may conduct random tests for alcohol and other drugs in anyone performing a safety-sensitive aviation activity whether for an organisation or in a private capacity.

A crew member must not consume alcohol while onboard the aircraft.

A crew member is, or is likely to be, unfit to perform a duty if the crew member is:

› fatigued to the extent that their ability to safely perform the duty is reduced, or likely to be reduced, or

› under the influence of a psychoactive substance to the extent that their ability to safely perform the duty is reduced, or likely to be reduced.

Being fit to fly is a responsibility that not only rests with the operator (where applicable) but with the individual. Determining your fitness to fly requires sound and honest judgement. Illness, medication, illicit drugs, alcohol, stress, fatigue, lack of food and dehydration may affect your ability to operate safely (refer **Fatigue management PEG**).

Authority and responsibilities of pilot in command

(CASR 91.215)

You must ensure the safety of persons and cargo, and the safe operation of the aircraft during the flight.

You have the final authority over the operation of the aircraft and the maintenance of discipline by all persons on board. Your authority over the operation of the aircraft begins when the aircraft doors are closed before take-off, or the time the flight begins (whichever is earlier) and ends when the doors are opened after landing, or the time the flight ends (whichever is later).

Although this regulation identifies the period your authority begins and ends, you will have to take responsibility outside this period to ensure the safety of the flight. You may discharge your responsibilities by delegating certain tasks to others (such as crew members).

By definition, a flight begins when an aircraft first moves under its own power for take-off and ends when it comes to rest after being airborne.

Compliance with flight manual (CASR 91.095)

You must operate an aircraft in accordance with the aircraft flight manual or, where it applies, any conditions specified in the certificate of airworthiness or special flight permit, from:

› when the aircraft's doors are closed before take-off, and the flight begins,

to

› the later of the time the aircraft's doors are opened after landing, and the flight ends.

You must also ensure that any activity in relation to the flight or operation, whether occurring before, during or after the flight, is conducted in a way that meets each requirement or limitation for the activity in the AFM (EX81/21)

A reference to a flight manual, AFM or AFM instructions includes the normal, abnormal and emergency procedures and any operating limitation, instructions, marking and placards relating to the aircraft. For older aircraft the AFM may be referred to as the Pilot's Operating Handbook (POH), Owner's Handbook or Owner's Manual (See AC 21-34).

Actions and directions by the operator or pilot in command (CASR 91.220)

The pilot or the operator may, if they believe it is necessary for the safety of the aircraft, a person on the aircraft, or a person or property on the ground or water:

- direct a person to:
  - do, not to do or limit the doing of something while the person is on the aircraft, or
  - leave the aircraft before the flight begins.
- with assistance and use of reasonable and necessary force:
  - remove a person or a thing from the aircraft before the flight begins, or
  - restrain a person for the duration of the flight or part of the flight, or
  - seize a thing on the aircraft for the flight or part of the flight, or
  - place a person on the aircraft in custody, or
  - detain a person or a thing, until the person or thing can be released into the control of an appropriate authority.

A person directed by the pilot, or the operator must comply with the direction.

Note: Under regulation CASR 91.225, crew members of an aircraft have a limited power of arrest.

Manipulating flight controls (CASR 91.155)

A person must not, and you must not allow a person to, manipulate the flight controls of the aircraft unless the person is authorised or qualified to pilot the aircraft.

Offensive and disorderly behaviour (CASR 91.525)

A person must not behave in an offensive or disorderly manner which as a result may endanger the safety of the aircraft or persons onboard.

The operator or a crew member may refuse to allow a person to board an aircraft if they reasonably believe the person is likely to behave in an offensive or disorderly manner which could endanger the safety of the aircraft or persons onboard.

A person is taken to behave in an offensive or disorderly manner if they:

- assault, intimidate or threaten another person (this may be verbal or physical, and whether or not a weapon or object is used), or
- intentionally damage or destroy property.

Training flight limitations (CASR 91.725 , CASA EX 81/21)

Training flights are associated with elevated levels of risk. For this reason, the regulations prevent the carriage of passengers on such flights. However, the regulations do allow the carriage of permitted persons in certain circumstances. Pilots under training should seek guidance from their flying school or flying instructor or refer to the Part 91 PEG.

Limitations regarding engine shutdown or simulating engine failure in flight (CASR 91.725 - 91.775)

You may only shutdown an engine or simulate an engine failure in flight in certain situations. Please review CASR Part 91 plain English guide, section 3 Training – Causing or simulating engine failures.

Simulating the failure of flight instruments

(CASR 91.715 and CASA EX 81/21)

You may only simulate the failure of the following flight instruments for the purpose of training checking and testing:

- an attitude indicator
- a gyro compass or an equivalent instrument
- an airspeed indicator
- an altimeter.

Simulating IMC (CASR 91.720)

You must not simulate flying in IMC unless a safety pilot:

- occupies a pilot seat with fully functioning controls
- is qualified on the aircraft type
- has adequate forward vision.

Seating and carriage of persons, cargo, animals and firearms

Seating for flight crew members (CASR 91.550)

At all times during a flight, at least one pilot who is qualified and competent, must occupy a pilot seat with the seatbelt securely fastened.

Each flight crew member must occupy their station and have their seatbelt and shoulder harness securely fastened during take-off, landing or at any other time you direct.

Seating for persons on aircraft (CASR 91.545)

The pilot and the operator must not assign a seat (or berth) that is not fitted with a seatbelt or shoulder harness.

Exception: *This requirement does not apply where circumstances prescribed in the MOS apply.*

Restraint of infants and children (CASR 91.560)

A child means a person who has turned 2 but has not turned 13 years of age.
An infant is a person who has not turned 2 years of age.

Where a passenger is responsible for a child or infant and a direction is given, to fasten seatbelts or shoulder harnesses (as the case requires), they must ensure that the child or infant is restrained in accordance with the standards prescribed in the MOS.

Infant and child seatbelts as restraints (CASR 91 MOS 20.03)

An infant can be carried in the arms or on the lap of an adult provided their seatbelt is not fastened around the infant and the infant is otherwise restrained, for example, by using a supplemental loop belt also referred to as an infant seat belt.

A child that occupies their own seat must be restrained by the seatbelt.

A maximum of 2 children (neither can be infants) may sit side by side on one seat, provided their combined weight does not exceed 77 kg and the seatbelt, when fastened, restrains both children in the seat.

Provided you are reasonably satisfied that a child weighs less than 16 kg, they may be restrained as an infant as described above-provided they are not more than 12 years of age and have a serious medical condition which prevents them from sitting upright unaided and the responsible adult states in writing that the child:

› has a medical condition

› weighed less than 16 kg (at the time the statement was made)

› is unable to sit upright

› is otherwise fit to travel.

A supplemental loop belt provides an additional seat belt with a stitched loop through which the adult lap belt is passed. The seat belt is fastened around the adult, and the supplemental loop belt is then separately fastened around the infant (see figure below).

Figure: Supplemental loop belt

Child restraint systems that are not seatbelts

(CASR 91 MOS 20.04)

An infant or child is restrained when:

› they are restrained by an approved child restraint system

› their age, height and weight is within the ranges specified by the manufacturer of the system, and

› the system is:

  » used in accordance with the manufacturer's instruction

  » secured so as not to be a hazard to the person using the system, or to any other person

› a suitable adult is responsible for the person using the system.

The suitable adult must be seated in the seat closest to the seat on which the child restraint system is installed, and be competent to install the system, and secure and release the child.

An **aviation child restraint system** means, a child restraint system that complies with or is approved under CASR Part 21. Reference to a **shoulder harness** includes a child restraint system.

An **approved child restraint system** means a child restraint system meeting the requirements of one of the following:

› an automotive child restraint system

› an aviation child restraint system.

Note: An infant sling is not a suitable child restraint system.

An **automotive child restraint system** means a child restraint system that meets the requirements of one of the following:

› AS/NZS 1754:2004 Child restraint systems for use in motor vehicles

› Federal Motor Vehicle Safety Standards (FMVSS) No. 213

› Canadian Motor Vehicle Safety Standard (CMVSS) No. 213

› European Safety Standard requirements of ECE Regulation 44.

Carriage of cargo – general (CASR 91.600)

The pilot and the operator must not allow cargo to be carried in a place where:

› it could damage, obstruct or cause the failure of a control, electrical wiring, or a pipeline of the aircraft, or any other equipment that is essential to the safe operation of the aircraft

› the cargo weight exceeds the load limitations for the floor structure or any other load-bearing components of that place, as set out in the aircraft flight manual or a placard on the aircraft

› it obstructs an aisle except for passenger service equipment or galley equipment in an aisle on a temporary basis while in use

› an emergency exit is obstructed or access restricted, unless CASA has given approval.

Carriage of cargo – cargo compartments (CASR 91.605)

The pilot and the operator of an aircraft—where the aircraft flight manual (AFM) or regulations require more than one flight crew member and where the cargo compartment is designed so that a crew member would need to enter the compartment to extinguish a fire—must ensure the cargo is loaded in a way that allows a crew member to reach all parts of the compartment with a hand-held fire extinguisher.

Carriage of cargo – unoccupied seats (CASR 91.610)

The pilot and the operator must not allow cargo to be carried on an unoccupied seat if it weighs more than 77 kg unless the seat manufacturer allows a greater weight. The cargo and the means of restraint must not interfere with the safe operation of the aircraft.

Carriage of cargo – loading instructions (CASR 91.615)

The pilot and the operator may only allow cargo to be carried where a placard with instructions for the carriage of cargo is in place.

Exception: *This regulation excludes carry-on baggage weighing less than 9 kg stowed under a seat, or in a place designed for that purpose, or cargo that is carried on an unoccupied seat (CASR 91.610).*

Unauthorised travel or placing of cargo on aircraft (CASR 91.060)

A person may only travel, or place cargo, on an aircraft if the pilot or the operator has given their consent.

Carriage of animals

Carriage of animals (CASR 91.620)

A person may only bring an animal onto an aircraft with the permission of the pilot.

Before the pilot can give permission, all reasonable steps must be taken to ensure carrying the animal will not adversely affect aviation safety.

***Exception:** A person may bring an animal onto an aircraft without the permission of the pilot provided they have the permission of the air transport or aerial work operator. The operator may give the person permission provided that the operator and the pilot take reasonable steps to ensure that the carriage of the animal does not have an adverse effect on the safety of air navigation (EX81/21).*

Despite anything in the *Disability Discrimination Act 1992*, the carriage of an assistance animal (within the meaning of the *Disability Discrimination Act 1992*) can be refused if the pilot or the operator reasonably believe that it may have an adverse effect on aviation safety.

You are responsible for ensuring the safety of the flight when an animal is carried on an aircraft. It applies to a small private aircraft through to an air transport aircraft and each circumstance will require different considerations.

In general, carrying an animal is no different to carrying cargo. The animal must not block or impede access to or egress through an emergency exit. A large animal should always be secured so as not to damage or affect the balance of the aircraft in flight. A small or medium-sized animal carried in the cabin would normally need as a minimum to be restrained during take-off and landing and in turbulence.

When giving permission, you may need to consider: the type of animal and how it is carried, contained and restrained; its reaction to noise and being out of its natural environment; nuisance to other passengers; distraction to flight crew; and how excrement or fluids will be contained.

An air operator's certificate (AOC) holder's operations manual should provide instructions for carrying animals, including any limitations or requirements the operator expects personnel to follow.

Firearms

Possessing firearms on aircraft (CASR 91.160)

For the carriage of firearms on the following aircraft, refer to the *Aviation Transport Security Act 2004* and the *Crimes (Aviation) Act 1991*:

- regular public transport aircraft
- an air service in which a jet aircraft is used
- an air service in which an aircraft with a certified MTOW greater than 5,700 kg is used.

For the carriage of firearms on aerial work flights see CASR Part 138.

Passengers on the flights listed above who wish to carry or transport firearms, should seek guidance from the airline or operator.

For other flights—for example privately operated light aircraft under 5,700 kg MTOW—a person may only carry or possess a firearm if the pilot or the operator has given their consent.

Discharge of firearms in or from an aircraft (CASR 91.165)

No person may discharge a firearm while onboard an aircraft unless they are permitted to do so under the *Aviation Transport Security Act 2004*, the *Crimes (Aviation) Act 1991* or CASR Part 138.

Smoking (CASR 91.530) (s37 Air Navigation Regulations 2016)

A person must not smoke at any time while onboard an Australian domestic air transport flight that is carrying passengers.

A person must not smoke at any time while onboard an Australian international air transport flight (other than a freight-only flight).

A person must not smoke on a CASR Part 103 aircraft at any time.

For any other operation, a person must not smoke on an aircraft:

- during take-off or landing
- in the aircraft's toilet
- at any time the pilot has directed a person not to smoke.

A person is considered to have been directed when the 'no smoking' sign in the cabin has been illuminated, or at any time a permanent 'no smoking' sign is displayed.

Smoke or smoking includes using electronic cigarettes.

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Fuelling

Oil requirements (CASR 91.460)

You must ensure an aircraft carries enough oil to complete the flight safely.

Contaminated, degraded or inappropriate fuels (CASR 91.465)

The pilot and the operator must ensure that an aircraft has not been fuelled with contaminated, degraded or inappropriate fuel.

A person must not supply or fuel an aircraft with contaminated, degraded or inappropriate fuel.

Exception: *This regulation does not apply to a person supplying fuel for a Part 131 aircraft.*

Civil Aviation Safety Authority

Checking fuel for contamination is essential. Where various fuel types are available there is a risk of fuelling with an incorrect type. An aircraft's fuel system might still have enough fuel of the correct type to allow start, taxi and take off, only to have the engine fail or develop partial power soon thereafter.

You can assume that the fuel provided by the various fuel companies and suppliers will comply with the fuel standards. You should check the pump to ensure you are taking the correct fuel type for your aircraft.

Before your next flight you should take a sample of fuel from your aircraft by draining a small amount of fuel from each drain point on the aircraft into a clear container to check for water contamination. Normally water will show up by a separation in the bottom of the fuel sample. If this occurs, you should continue to drain the tank or line from where the sample was contaminated until you are obtaining a clear uncontaminated sample of fuel only. If there is still any doubt that the fuel is contaminated, do not take off. You may need to seek maintenance of the fuel system.

Often contamination of fuel by water can occur because of a poorly fitting fuel cap. Therefore, if you have washed your aircraft or it has been parked in the open and there has been rain or frost on the aircraft take particular care to check for water contamination.

Fuel from drums should be checked for contamination before it is pumped into your aircraft. Testing for the presence of water in fuel should be done using a water detecting paste, paper or other positive method.

In the case of turbine fuel, you should watch for signs of cloudiness or other indications of the presence of suspended water droplets. Compared to Avgas the presence of water contamination may not show up for some time after fuelling.

Always follow any flight manual instructions where provided.

Contaminated or degraded fuel has the potential to to result in an engine failure, or even partial loss of power soon after take-off. To highlight the importance of managing partial power losses see the ATSB advisory document titled 'Avoidable Accidents No 3 – Managing partial power loss after take-off in single engine aircraft'.

For further guidance refer to AC 91-25 Fuel and oil safety.

Fire hazards (CASR 91.470)

When an aircraft is being fuelled, a person must not create a fire hazard, or allow a fire hazard to exist, within 15 m of the aircraft or equipment used to fuel the aircraft.

All reasonable precautions against fire hazard should be taken. All equipment should be of sound design and should be maintained in safe working condition. Give attention to sources of ignition such as:

- persons smoking
- incandescent carbon or naked flame which could be emitted from the engine or associated equipment
- arcing between metallic parts of electrical circuits and components caused by:
  - operation of switch contacts
  - faulty cable terminals
  - breakdown of electrical insulation
  - moving contacts, or rotary electrical equipment
  - accidental short circuiting or open circuiting
  - exposure of hot parts to combustible matter
  - overheating of working parts to the ignition temperature of any oils, fuel or other combustible matter in the vicinity of the engines.

In the event of a fuel spillage, measuring more than 2 m in diameter, the fuelling overseer should:

- consider evacuation of the area (it is generally safer to evacuate upwind and upslope of any fuel spillage)
- notify the aerodrome rescue and firefighting service and comply with laid-down aerodrome procedures
- prevent the movement of persons or vehicles into the affected area and restrict all activities in the vicinity to reduce the risk of ignition.

You should not start a vehicle engine within 6 m of a spillage until the area is declared safe.

Fuelling aircraft – firefighting equipment

(CASR 91.475)

A person who fuels an aircraft must ensure at least 2 fire extinguishers are readily available and positioned not less than 6 m but not more than 15 m from the fuelling point. Each fire extinguisher must be of a type and capacity suitable for extinguishing fuel and electrical fire.

A fuelling operation in Australia must comply with Australian/New Zealand Standard AS/NZS 1841.

Exception: *For a CASR Part 131 (balloon) aircraft, one fire extinguisher only is required to be positioned not less than 6 m but not more than 15 m from the fuelling point.*

The joint Australian and New Zealand Standard AS/NZS-1841 is the standard that applies to portable fire extinguishers that are to be available for use during a fuelling operation.

Fuelling aircraft – electrical bonding (CASR 91.480)

A person who fuels an aircraft must ensure the aircraft and equipment used to fuel the aircraft are electrically bonded.

Electrical bonding is important to equalise the electrical potential (charge) between the aircraft, the fuel tanks and the fuelling equipment so as to prevent any static electrical discharge between them. Before fuelling, the fuelling equipment must be bonded to the aircraft, and the filler nozzle must be bonded to the aircraft before removing the filler cap. Once fuelling has stopped, and the filler cap is replaced, all bonding can be removed.

Equipment or electronic devices operating near aircraft (CASR 91.485)

Operation of equipment or electronic device near aircraft during fuelling

When an aircraft is being fuelled a person must not operate equipment or an electronic device within 15 m of a critical fuelling point for the aircraft.

Fuelling aircraft while equipment or electronic device is operated near aircraft

A person must not fuel an aircraft when equipment or an electronic device is being operated within 15 m of a critical fuelling point of the aircraft.

Exception: *The above requirements do not apply if the equipment or electronic device:*

- *is part of the aircraft or the aircraft's fuelling equipment, or*
- *is designed for use during fuelling operations, or*
- *performs an aircraft servicing function and is safe for use within 15 m of a critical fuelling point for the fuelling of the aircraft, or*
- *complies with an industry standard about the safe use of equipment or electronic devices within 15 m of a critical fuelling point for the fuelling of the aircraft.*

Exception: *The auxiliary power unit (APU) of the aircraft may be operated during fuelling if it is permitted by the AFM and started before fuelling begins.*

Exception: *An operating electronic device, hazardous to the process of fuelling only because it is designed to produce radio emissions (within the meaning of the Radiocommunications Act 1992), may be used but must be at least 6 m from each critical fuelling point when fuelling the aircraft.*

Fuelling turbine-engine aircraft – low-risk electronic devices (CASR 91.490)

Use of device inside cabin of aircraft

A person may only operate a low-risk electronic device inside the cabin of a turbine-engine aircraft being fuelled when you have given permission, and each cabin door within 3 m of a critical fuelling point is closed.

Use of device outside cabin of aircraft

A person may only operate a low-risk electronic device outside the cabin of a turbine-engine aircraft while it is being fuelled if the device is operated more than 3 m from each critical fuelling point.

Exception: *A person may operate a low-risk electronic device outside the cabin of a turbine-engine aircraft while it is being fuelled, less than 3 m from each critical fuelling point, if:*

- *the person is employed or engaged by the operator*
- *they have been trained:*
  - *to operate the device in such areas*
  - *to avoid the risks associated with being distracted when doing so, and*
- *the operator has assessed the person's competence to comply with the fuelling regulations as set out in this section.*

Hot fuelling (CASR 91.495)

Only a turbine-engine aircraft may be hot fuelled.

Hot fuelling only applies to specialised operations and does not normally apply to Part 91 aircraft flying under the VFR. Please see Part 91 PEG for the requirements pertaining to hot fuelling.

Fuelling aircraft – persons on aircraft, boarding or disembarking (CASR 91.510)

Highly volatile fuel

When fuelling an aircraft with highly volatile fuel (AVGAS or MOGAS), the pilot must ensure that no person, other than a crew member is onboard, boarding, or disembarking from the aircraft.

Other than highly volatile fuel

When fuelling an aircraft with other than highly volatile fuel (AVTUR or kerosene), the pilot or the operator must hold an approval to do so when a person other than a crew member is onboard, boarding, or is disembarking.

Exception: *This regulation does not apply to the replacement of (gas) fuel cylinders on a balloon or hot air airship (a CASR Part 131 aircraft).*

A highly volatile fuel is one which easily evaporates when brought into contact with the air. In aviation, this generally refers to AVGAS or MOGAS fuel. Fuel 'other than highly volatile' generally refers to AVTUR or kerosene (also see the definition of 'highly volatile fuel' in the CASR Dictionary.)

Ground operations

Parked aircraft not to create hazard (CASR 91.420)

A person must not park an aircraft in a place where it is a hazard to the movement of other aircraft.

Safety when aeroplane is operating on the ground (CASR 91.425) (MOS 18.01)

Only a pilot, a person qualified to taxi under CASR Part 64, or a person operating the aeroplane for maintenance or maintenance training, may start the engine of an aeroplane on the ground. When a person starts the engine the aeroplane must be secured from moving.

When hand starting the engine using the propeller, and assistance is not readily available, a person must secure the aeroplane from moving and no other person may be onboard.

However, a person may have another person in a pilot seat to assist with starting, to apply the brakes and control the engine including shutting down the engine, provided they have been instructed how and their competence has been assessed by a qualified person.

Civil Aviation Safety Authority

Taxiing aircraft (CASR 91.415)

An aircraft may only be taxied by a person who is qualified.

Taxiing or towing on movement area of aerodrome (CASR 91.365)

Unless an aircraft or tow vehicle is being operated in accordance with an air traffic control (ATC) clearance or instruction, a person taxiing or towing the aircraft on the movement area of an aerodrome, must:

- give way to a landing aircraft, or one on its final approach to land
- give way to an aircraft taking off, or preparing to take off
- keep well clear of another aircraft when overtaking that aircraft
- give way to the aircraft on the right if both aircraft are on a converging course
- stop, or alter course to the right to remain clear of an aircraft approaching head-on or approximately head-on
- when giving way to an aircraft preparing to take off, taking off, landing, or on final approach to land, hold at the marked runway hold position, or where no hold position is marked, not encroach on a graded runway strip.

Exception: *You may take whatever action is necessary to avoid a collision.*

A movement area is any part of an aerodrome used for the take-off, landing and taxiing of aircraft including manoeuvring areas and aprons.

Aircraft with restricted forward visibility when on the ground—such as tailwheel or certain high wing aircraft—when holding for line up to take off should orient in such a way that other circuit traffic, particularly on the upwind or crosswind legs can be seen.

Safety when rotorcraft operating on ground

(CASR 91.430)

For other than maintenance or maintenance training, only a qualified pilot may operate a rotorcraft on the ground.

The MOS may prescribe another person who may also operate a rotorcraft on the ground for other than maintenance or maintenance training provided they secure the rotorcraft from moving.

Anti-collision lights – display (CASR 91 MOS 26.22)

An aircraft operating by day or night must be fitted with the number of anti-collision lights required by the aircraft type design, that include at least:

- 1 red beacon, or
- 2 white strobes, or
- a combination of these lights.

Where anti-collision light equipment is comprised of red beacons only, or white strobes only, the lights must be displayed as follows:

- turbine-engine aircraft – from immediately *before* the engines are started until the engines are shut down at the end of the flight
- any other aircraft – from immediately *after* the engines are started until the engines are shut down at the end of the flight.

Where anti-collision light equipment is comprised of a combination of red beacons and white strobes, the lights must be displayed as follows:

- for red beacons as above
- for white strobe lights:
  - any time the aircraft crosses a runway in use for take-offs or landings (an active runway), while the aircraft is crossing the active runway
  - from the time the aircraft enters the runway to take off until the time the aircraft leaves the runway after landing.

Exception: *Anti-collision lights do not need to be displayed (on) if:*

- *given the circumstances you reasonably believe the reflection or glare caused by the lights may pose a hazard to the aircraft, or*
- *if permitted by another MOS provision e.g. MOS 12.09 of the Part 138 MOS. See also MOS 3.08 of the Part 91 MOS*

It is recommended for piston engine aircraft, where practicable, that you switch anti- collision lights on prior to starting the aircraft's engines unless doing so might deplete the battery and prevent the engine from starting.

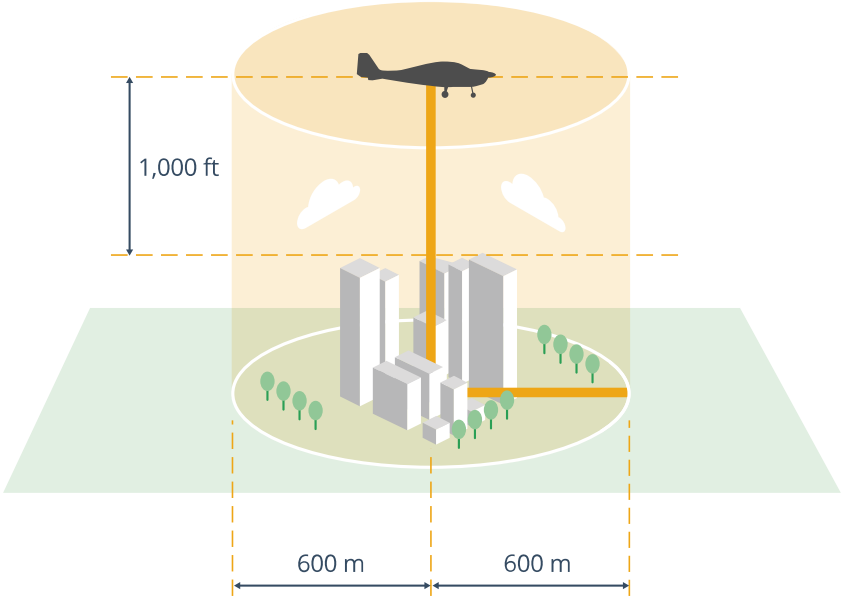
In flight

Minimum height rules – populous areas and public gatherings (CASR 91.265) (MOS 12.01)

Aeroplane

You must not fly an aeroplane over a populous area or public gathering below 1,000 ft above the highest feature or obstacle within a horizontal radius of 600 m of the point on the ground or water immediately below the aeroplane.

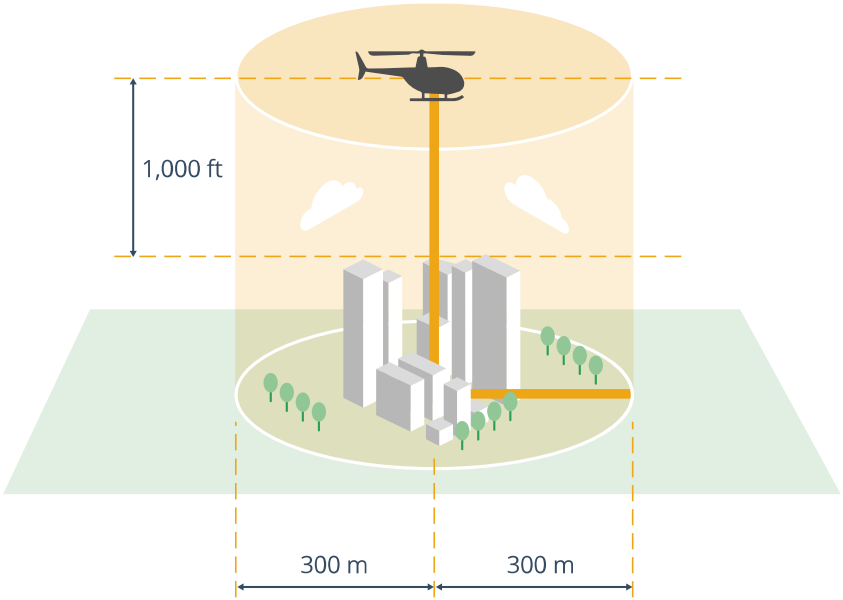
Figure: Minimum height populous areas and public gatherings for aeroplane



Helicopter

You must not fly a helicopter over a populous area or public gathering below 1,000 ft above the highest feature or obstacle within a horizontal radius of 300 m of the point on the ground or water immediately below the helicopter.

Figure: Minimum height populous areas and public gatherings for helicopter



Exception: *This rule does not apply in the following circumstances:*

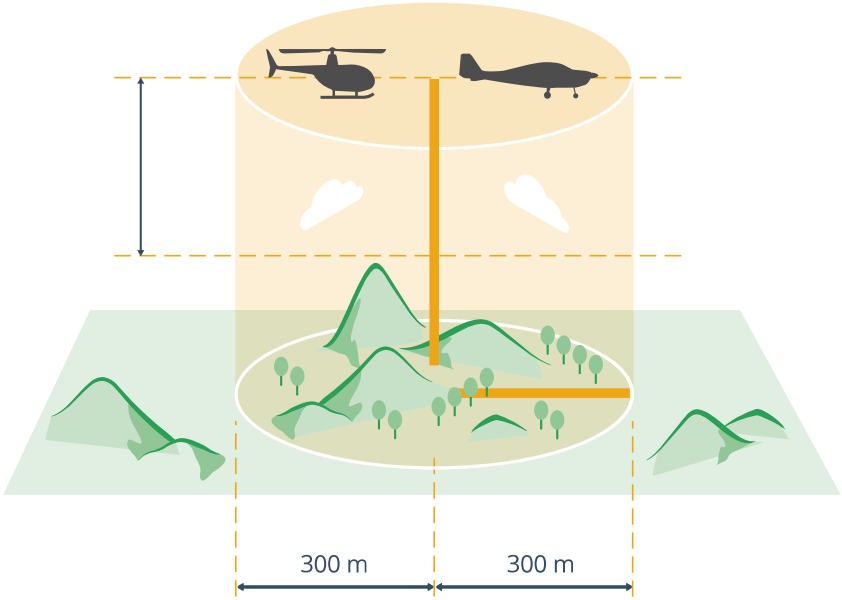
- *taking off or landing:*
  - *for take-off – when the point of lift off and climb to the planned cruising level is in accordance with the normal procedures for the aircraft type*
  - *for landing – when the landing is conducted in a continuous descent from the cruising level or circuit height to the landing threshold using rates of descent and flight manoeuvres which are normal for the aircraft type*
- *engaging in a missed approach*
- *practicing emergency procedures at an aerodrome without passengers onboard*
- *circuit training at an aerodrome*
- *carrying out air display activities for which you hold an approval*
- *for a rotorcraft – hovering, air transiting, air taxiing or ground taxiing at an aerodrome*
- *for a rotorcraft, seaplane or amphibian – flying within an access lane used by aircraft taking off from, or landing at, a particular place, and details of which are published in the Authorised Aeronautical Information (AAI)*
- *for a single-engine seaplane or a single-engine amphibian operating over water and within safe gliding distance of open water suitable for a forced landing, and not flown below 1,000 ft above the highest feature or obstacle within a horizontal radius of 300 m of the point on the water immediately below the aeroplane*
- *engaging in a procedure to determine the suitability of an aerodrome for a landing*
- *engaging in the validation of a terminal instrument flight procedure that is conducted in accordance with a terminal instrument flight procedure under regulation 173.095 of CASR and the Part 173 MOS. EX81/21*

Minimum height rules – other areas

(CASR 91.267) (MOS 12.02)

When flying over an area that is not a populous area or public gathering (CASR 91.265), you must not fly an aircraft below 500 ft above the highest feature or obstacle within a horizontal radius of 300 m of the point on the ground or water immediately below the aircraft.

Figure: Minimum height for other areas



Exception: *This rule does not apply in the following circumstances:*

- *taking off or landing:*
  - *for take-off–when the point of lift off and climb to the planned cruising level is in accordance with the normal procedures for the aircraft type*
  - *for landing – when you are conducting a circling manoeuvre as part of an instrument approach procedure (IAP) using rates of descent and flight manoeuvres which are normal for the aircraft type*
  - *for landing – when the landing is conducted in a continuous descent from the cruising level or circuit height to the landing threshold using rates of descent and flight manoeuvres which are normal for the aircraft type*
- *engaging in a missed approach*
- *not carrying passengers and practicing emergency procedures at an aerodrome*
- *not carrying passengers and practicing a forced landing procedure with the consent of the person or authority having control over the land or water above which the procedure is carried out*
- *low-flying training by a CASR Part 141 operator, or a low-flying activity by a CASR Part 142 operator, and the aircraft:*
  - *is not carrying passengers, and*
  - *is being flown over an area that, with the consent of the person or authority with control of the area, has been determined by the operator to be suitable as a flight training area and the pilot has surveyed it for obstacles before the flight*
- *performing training circuits at an aerodrome*
- *to determine the suitability of an aerodrome for a landing*
- *carrying out air display activities for which you hold an approval*
- *all of the following apply:*
  - *you hold a low-flying authorisation under CASR Part 61, or hold an approval, provided the point on the ground or water vertically below the aircraft is not within 150 m of a person, vessel, vehicle, structure or livestock, and you conduct a risk assessment of the area to be flown over*
- *for a rotorcraft – when the rotorcraft is hovering, air transiting, air taxiing or ground taxiing at an aerodrome.*
- *for a rotorcraft, seaplane or amphibian – when flying within an access lane used by aircraft taking off from, or landing at, a place, and the details are published in the AAI.*

Low flying (CASR 61Q, 61.1040, 61.1050, 61.1075)

You must have at least a private pilot licence to hold a low-level rating. A low-level rating authorises you to conduct low-level operations under certain conditions.

Before flying any low-level operation, you must do a risk assessment of the proposed area. You must also hold the appropriate low-level endorsement for the type of low-level operation you wish to conduct. There are nine low-level endorsements:

- aeroplane
- helicopter
- powered lift
- gyroplane
- aerial-mustering aeroplane
- aerial-mustering helicopter
- aerial-mustering gyroplane
- sling operations
- winch and rappelling operations.

Recent experience requirements for low flying (CASR 61.1055)

You are allowed to exercise the privileges of your low-level rating only if, within the last six months, you have:

- flown at least 2 hours of low-level operations, or
- been assessed as competent to conduct low-level operations by a flight instructor who holds a low-level training endorsement, or
- successfully completed within the previous six months
  - an operator proficiency check in low-level operations, or
  - a flight review for the rating.

In addition, within the previous 24 months, you must have (CASR 61.1060) (CASA EX 48/17):

- completed a rating flight review, or
- passed a rating flight test, or
- passed an endorsement flight test, but more than six months after passing a flight test, or

- completed an aerial application proficiency check, or
- completed an operator proficiency check, or
- successfully taken part in an operator's approved cyclic training and proficiency program that covers the rating.

Aerobatic flying (CASR 91.185)

You may only fly aerobatic manoeuvres over a populous area, at an air display, or at night, if you hold an approval.

You must not fly aerobatic manoeuvres in IMC.

Pilots must hold an aerobatic flight activity endorsement (see CASR 61.380) and Flight activity endorsement table (CASR 61.1145).

An aerobatic flight manoeuvre is one that has:

- bank angles greater than 60°, or
- pitch angles greater than 45° or otherwise abnormal for the aircraft type, or
- abrupt changes of speed, direction, angle of bank or angle of pitch.

You must not engage in aerobatic flight below 3,000 ft above ground level (AGL) unless your aerobatic activity endorsement permits lower heights.

Before engaging in an aerobatic manoeuvre, you should ensure:

- any loose objects are either removed from the aircraft or stowed securely
- all hatches and doors are securely fastened
- seat belts or harnesses are securely and firmly fastened
- seat belts or harnesses of any vacant seat are made secure
- you have checked for other aircraft in the vicinity.

Aerobatic activities in the vicinity of a non-controlled aerodrome – exemptions and directions (EX81/21)

If you are conducting an aerobatic activity that is a Club activity, instrument EX81/21 provides for certain exemptions and directions. Please consult the Part 91 Plain English guide appendix C for further guidance.

Formation flying

Aircraft not to be operated in manner that creates a hazard (CASR 91.055)

You must not operate an aircraft in a manner that creates a hazard to another aircraft, person or property.

CASR 61.385 requires that you must be competent before you fly your aircraft. Although your competence is checked periodically you must always be conversant with aircraft systems, performance and limitations etc. Seek refresher training if necessary.

See CASR 61.385, for more detail about the limitations on exercising the privileges of your pilot licence.

Flying in formation (CASR 91.205) (MOS 6.01)

You may only fly an aircraft in formation, if you have prearranged the flight with the other pilots making up the formation.

You may only fly an aircraft in formation at night, or in IMC, if you hold an approval.

Note: Pilots must hold a flight activity endorsement to fly in formation. See CASR 61.380 and Flight activity endorsement table (61.1145).

Exception: *If you are soaring, with one or more gliders in a thermal, and although such a flight constitutes a formation flight, you do not need to have prearranged the flight with other pilots (CASR 91 MOS 6.02).*

Aircraft are flying in formation any time 2 or more aircraft are flown in close proximity to each other or one or more aircraft are flying in-company and they operate as a single aircraft with regard to navigation, position reporting and control.

Aircraft are also considered to be in formation when they are manoeuvring to achieve separation from each other to effect individual control (break away) and during join up.

For determining what constitutes 'close proximity', you must consider the type of aircraft in the formation and their speed.

For surveillance purposes, only one aircraft in the formation or company needs to operate surveillance equipment.

Aircraft speeds

All flights – airspeed limits (CASR 91.090) (MOS 4.02)

Unless it is required for aviation safety, you must not exceed the speed limits set out in the following Table.

Table: Airspeed limits – all flights

Class of airspace	Flight rules	Maximum Indicated airspeed
Class C	VFR	Below 10,000 ft AMSL – 250 knots (kt)
Class D	IFR or VFR	No limiting speed if you declare a higher speed is an operational requirement and it is authorised by ATC, otherwise 250 kt
		200 kt if at or below 2,500 ft above aerodrome elevation within 4 NM of the primary aerodrome in that airspace
Class E or G	IFR or VFR	below 10,000 ft AMSL – 250 kt

Note 1: Pilots must comply with airspace speed limitations unless specifically cancelled by ATC.

Note 2: Speed limitations are not applicable to military aircraft except as specified in ERSA.

You must advise ATC if you cannot comply with an ATC speed instruction or you cannot meet an arrival or departure speed constraint, or you cannot operate within the airspeed limits tabled above.

Pilot in command to report hazards to air navigation (CASR 91.675)

If you become aware of a hazard to air navigation that is not published in the AIP, as soon as circumstances permit you must report the hazard to:

› ATS

› the aerodrome operator if the hazard is on an aerodrome.

If you reasonably believe the hazard has already been reported there is no need to make the report.

Navigation logs

This was formerly a requirement under CAR 78. However, keeping of navigation logs is not required under the CASR.

Journey logs however are required for flights that begin or end outside Australian territory (refer CASR 91.120, MOS 5.02 and 5.03).

Fuel monitoring is required (see CASR 91, MOS 19.05).

Civil Aviation Safety Authority

Rules for prevention of collision

Basic rule (CASR 91.325)

During a flight, a flight crew member must maintain vigilance, so far as weather conditions permit, to see and avoid other aircraft.

See AC 91-10 – Operations in the vicinity of non-controlled aerodromes and AC 91-14 – Pilot's responsibility for collision avoidance, for information on and the limitations of 'see and avoid'.

Right-of-way rules (CASR 91.330)

When taking evasive action because of a collision risk with another aircraft, you must follow the right-of-way rules shown in the following table.

Table: Right-of-way rules

Item	Circumstance	Right-of-way rule
1	An aircraft is in an emergency and compelled to land.	All aircraft must give way to the aircraft compelled to land.
2	An aircraft is landing.	Any other aircraft (whether in flight or operating on the ground or water) must give way to the landing aircraft.
3	Two heavier-than-air aircraft are on approach to land at an aerodrome.	The following rules apply: › The higher aircraft must give way to the lower aircraft. › However, if the higher aircraft is in the final stages of an approach to land, the lower aircraft must not take advantage of the higher aircraft's requirement to give way to the lower aircraft and cut in front of the higher aircraft. › A power-driven heavier-than-air aircraft must give way to an unpowered glider.
4	An aircraft is overtaking another aircraft.	The overtaking aircraft must give way to the aircraft being overtaken.

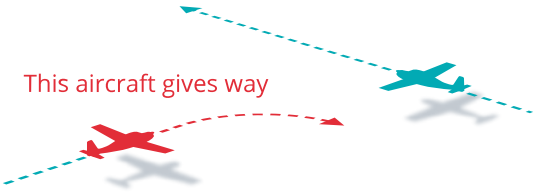
Item	Circumstance	Right-of-way rule
5	An aircraft is in the vicinity.	The following shows right-of -way in descending order: › balloon › parachute descent › unpowered glider › airship › an aircraft that is towing something (including another aircraft) › power-driven aircraft.
6	Two aircraft are on converging headings at approximately the same altitude.	The aircraft that has the other aircraft on its right must give way to the other aircraft.

Exception: *Although the right-of-way rules apply, you may take whatever action is necessary to avoid a collision*

Additional right-of-way rules (CASR 91.335)

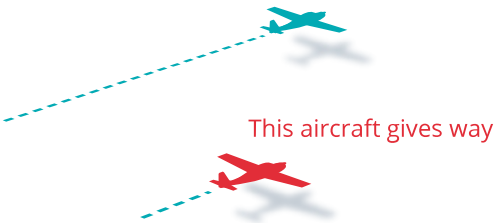
If there is a collision risk, the aircraft that has the right of way to another aircraft must maintain the same heading and speed until there is no longer a risk of collision.

Figure: Aircraft with right-of-way to maintain heading and speed



When overtaking another aircraft, whether climbing, descending or in level flight, you must keep out of the way of the other aircraft, even if it alters course while being overtaken; pass on the right, and remain on the right until well clear.

Figure: Overtaking aircraft to keep clear and to the right



Where 2 aircraft are approaching head-on, or approximately head-on, each aircraft must alter heading to the right.

Figure: Aircraft approaching head-on to alter heading to the right

Where an aircraft is required to give way to another aircraft, the aircraft must not be flown so that it passes ahead, or directly over, or under the other aircraft so closely that there is a collision risk.

Figure: Aircraft giving way not to create collision risk

Exception 1: *If necessary, you may take whatever action is necessary to avoid a collision.*

Exception 2: *The right-of-way and additional right-of-way rules do not apply if you are responding to a command of the aircraft's airborne collision avoidance system and manoeuvring is necessary to ensure the safety of the aircraft.*

Right-of-way rules for take-off and landing

(CASR 91.340)

During a take-off or landing you must not fly an aircraft in a way that creates a risk of collision with another aircraft, person, vessel, vehicle or structure.

Compliance with international regulations (CASR 91.345)

An aircraft operating on water must comply with the requirements of the International Regulations for Preventing Collisions at Sea, 1972, except where they are inconsistent with CASR 91.355 – Giving way on water.

Giving way to vessels (CASR 91.350)

When in level flight or manoeuvring near the surface of the water, you must, as far as possible, keep clear of a vessel, or avoid impeding its navigation.

Giving way on water (CASR 91.355)

You must give way to, and keep well clear of, an aircraft or vessel converging from the right.

You must turn to the right to keep well clear of an aircraft or vessel that is approaching head-on, or approximately head-on.

If you are overtaking a vessel or another aircraft, you must give way to the vessel or aircraft being overtaken, by altering your heading to keep well clear.

Exception: *If necessary, you may take whatever action is necessary to avoid a collision.*

The aviation regulations for avoiding collision on water are consistent with marine regulations.

Pilot maintenance

CASA strongly recommends guidance should be sought by pilots from a relevant Part 66 licence holder on the correct aircraft maintenance practices and procedures.

Part 61 RPL and PPL (or higher) licence holders are permitted to carry out some maintenance tasks on an aircraft. These are listed in CAR 1988 Schedule 8 for Class B aircraft, and various other conditions apply. These privileges do not apply to Recreational Pilot Certificate issued by a sport aviation body or ASAO.

What maintenance are you permitted to carry out?

As a pilot you can conduct daily inspections and perform maintenance for a Class B aircraft under 1988 42 ZC(d) and in accordance with CAR Schedule 8 and Schedule 5 of the CAR.

CASA may also issue instruments, which have a validity period-which permits specific maintenance tasks to be carried out by certain people. For example:

› 149/11 'Authorization-pilot of class B aircraft with optional dual controls'

› 67/13 'Authorization-pilot of class B helicopter'.

What you need to have when performing maintenance

› appropriate tools calibrated and in a good state of repair

› current approved data

› appropriate experience and training

› approved spare parts.

Daily inspection

The pre-flight inspection and the daily inspection is one of the most important inspections for an aircraft in service. It is the only thorough inspection between periodic inspections and is the last real opportunity to inspect the aircraft to ensure that:

› it is airworthy and fit to fly

› its equipment is serviceable and suitable for the day's particular operation/s.

Key considerations for daily inspection:

› Perform the daily inspection before the first flight of each day the aircraft is flown.

› It is more detailed than a pre-flight inspection or walk-around.

› It must be signed for in Part 3 of the maintenance release.

› It must be performed by either a licensed aircraft maintenance engineer (LAME) or a pilot who at a minimum holds an RPL which allows him or her to fly the aircraft as pilot in command.

› Perform the daily inspection in a systematic and thorough manner.

Further information

You can access further information from **Part 43 Maintenance of aircraft in private and aerial work operations (casa.gov.au)**

Aircraft equipment

Operating aircraft with inoperative, equipment – placarding (CASR 91.150)

Before a flight, the pilot and the operator must ensure an inoperative placard is applied to any inoperative item of equipment required to be fitted or carried which is accessible and likely to be used.

Figure: Example of an inoperative placard

Required to be fitted means, required by the type certifying authority or the regulations. Where an item of equipment is permitted to be inoperative, you must comply with any associated conditions or restrictions to ensure that the aircraft is operated safely.

Day VFR equipment

Aeroplane – VFR flight by day (CASR 91 MOS 26.06 and 26.10)

An aeroplane flying under day VFR must be fitted with the equipment for measuring and displaying the flight information as shown in the following Table.

Table: Equipment for measuring and displaying flight information – aeroplane VFR by day

Flight Information	Requirements
Indicated airspeed	No additional requirements
Mach number	Only for an aeroplane with operating limitations expressed as a Mach number
Pressure altitude	The equipment must: › have an adjustable datum scale calibrated in millibars or hPa, and › be calibrated in feet, except: » for flights in a foreign country which measures FLs or altitudes in metres, be calibrated in metres, or fitted with a conversion placard or device.
Magnetic heading	The equipment must be: › a direct reading magnetic compass, or › both a remote indicating compass and a standby direct reading magnetic compass.
Time	The equipment must display accurate time in hours, minutes and seconds, and be either: › fitted to the aircraft, or › worn by, or immediately accessible to, the pilot for the duration of the flight.
Turn and slip	Only for aerial work operations
Outside air temperature	Only for aerial work operations from an aerodrome at which ambient temperature is not available from ground-based instruments

A full description of all aircraft equipment requirements can be found in CASR 91 and section 26 of the Part 91 MOS.

For comprehensive equipment information for light sport aircraft, experimental aircraft and certain Australian-registered aircraft see Part 91 PEG.

Night VFR equipment (CASR 91 MOS 26.07 and MOS 26.11)

An aeroplane for VFR flight at night must be fitted with:

- an approved GNSS, or
- an automatic direction finder (ADF) or VHF omni-directional radio range (VOR).

If an approved GNSS has automatic barometric aiding options as specified in the standards below, they must be connected:

- (E)TSO-C129a
- (E)TSO-C145a
- (E)TSO-C146a
- (E)TSO-C196a.

An aeroplane flying under night VFR must have equipment for measuring and displaying the flight information, as shown in the following Table.

Table: Equipment for measuring and displaying flight information-aeroplane VFR by night

Flight information	Requirements
Indicated airspeed	The equipment must be capable of being connected to: › an alternate source of static pressure that: » a pilot can select » includes a selector that can open or block the aeroplane's static source and alternative static source simultaneously, or › a balanced pair of flush static ports.
Mach number	Only for an aeroplane with operating limitations expressed as a Mach number
Pressure altitude	The equipment must: › have an adjustable datum scale calibrated in millibars or hPa, and › be calibrated in ft except » if a flight is conducted in a foreign country which measures flight levels (FLs) or altitudes in metres, be calibrated in metres or fitted with a conversion placard or device › for *aeroplane only* be capable of being connected to: » an alternate source of static pressure that a pilot can select, or » a balanced pair of flush static ports.

Flight information	Requirements
Magnetic heading	› a direct-reading magnetic compass, or › both a remote indicating compass and a standby direct-reading magnetic compass
Time	The equipment must display accurate time in hours, minutes and seconds, and be either: › fitted to the aircraft, or › worn by, or immediately accessible to, the pilot for the duration of the flight.
Turn and slip	The equipment must display turn-and-slip information, except when a second independent source of attitude information is available, in which case only the display of slip information is required.
Attitude	No additional requirements
Vertical speed	The equipment must be capable of being connected to: › an alternate source of static pressure that a pilot can select, or › a balanced pair of flush static ports.
Stabilised heading	The equipment must indicate whether the power supply to the gyroscopic instruments is working satisfactorily. **Note:** A gyro-magnetic type of remote indicating compass meets this requirement if it has a primary and an alternate power supply.
Outside air temperature	No additional requirements

Note: For gyroscopic instruments (if any), equipment that indicates whether the power supply is adequate must be fitted.

For comprehensive equipment information for light sport aircraft, experimental aircraft and certain Australian-registered aircraft see Part 91 PEG.

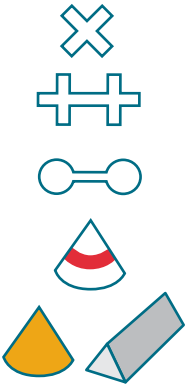
Aerodromes

Light and ground signals (AIP ENR 1.5)

Light signals

On ground	Light mode	In flight
Authorised to **take off** if pilot is satisfied that no collision risk exists	 Green	Authorised to **land** if pilot is satisfied that no collision risk exists
Authorised to **taxi** if pilot is satisfied that no collision risk exists	 Green flashing	**Return** for landing
Stop	 Red	**Give way** to other aircraft **and continue** circling
Taxi clear of landing area in use	 Red flashing	**Do not land** Aerodrome unsafe
Return to starting point on aerodrome	 White flashing	

Symbols near wind direction indicator



Aerodrome unserviceable

Gliding operations in progress

Operations are confined to hard surface runways, aprons and taxiways only

Unserviceable area marker

Boundary markers

Aerodrome markings (AIP AD 1.1)

Visual approach slope indicator systems (VASIS)

Two types of VASIS are approved for use in Australia:

- T-VASIS – a high-intensity system for use by day or night
- precision approach path indicator (PAPI) – a colour discrimination system usable by day or night.

The standard installation aims to provide an obstacles clearance of at least 11 m above a 1.9° slope, within the azimuth splay of 7.5° either side of the runway centre line for a distance of a 5 NM from the threshold or 7 NM for a runway equipped with an instrument landing system (ILS).

When the installation differs from the standard, details are promulgated in the aerodrome documentation.

T-VASIS

The cross-bar indicates on-slope and deviations appear as one, two or three lights above or below the cross-bar. The sensitivity is similar to the 'dot positions' on an ILS glide path.

Increased eye height over the threshold can be achieved by flying the approach with one or more of the 'fly-down' lights visible.

Approach slope indication	Eye height above threshold
3 lights fly up	0 to 7 ft
2 lights fly up	7 to 25 ft
1 light fly up	25 to 41 ft
On glide slope	**49 ft**
1 light fly down	57 to 75 ft
2 lights fly down	75 to 94 ft
3 lights fly down	94 to 176 ft

Notes: The night azimuth splay is normally increased to 30° to permit T-VASIS to be visible on the base leg. However, obstacle clearance is not guaranteed until the aircraft is within the runway approach obstacle limitation surface. Accordingly, T-VASIS should not be used for approach-slope guidance until the aircraft is aligned with the runway.

The presence of a thin layer of ground fog or mist may produce abnormal T-VASIS indications, including erroneous fly-down or fly-up signals, or other fly-up or fly-down lights together with the correct lights (which are usually much brighter than the erroneous lights). Consequently, you should exercise caution when using the T-VASIS in ground fog or other conditions conducive to light reflection or refraction.

The above requirements may vary by 15 ft depending on the location of the system. The intensity of the system may be varied at your request.

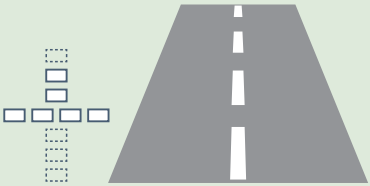
An abbreviated version of T-VASIS, AT-VASIS, is used at some locations, with the equipment located on only one side of the runway (usually the left).

On glide slope

Slightly high

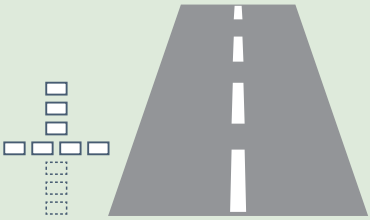
Slightly low

High



Low

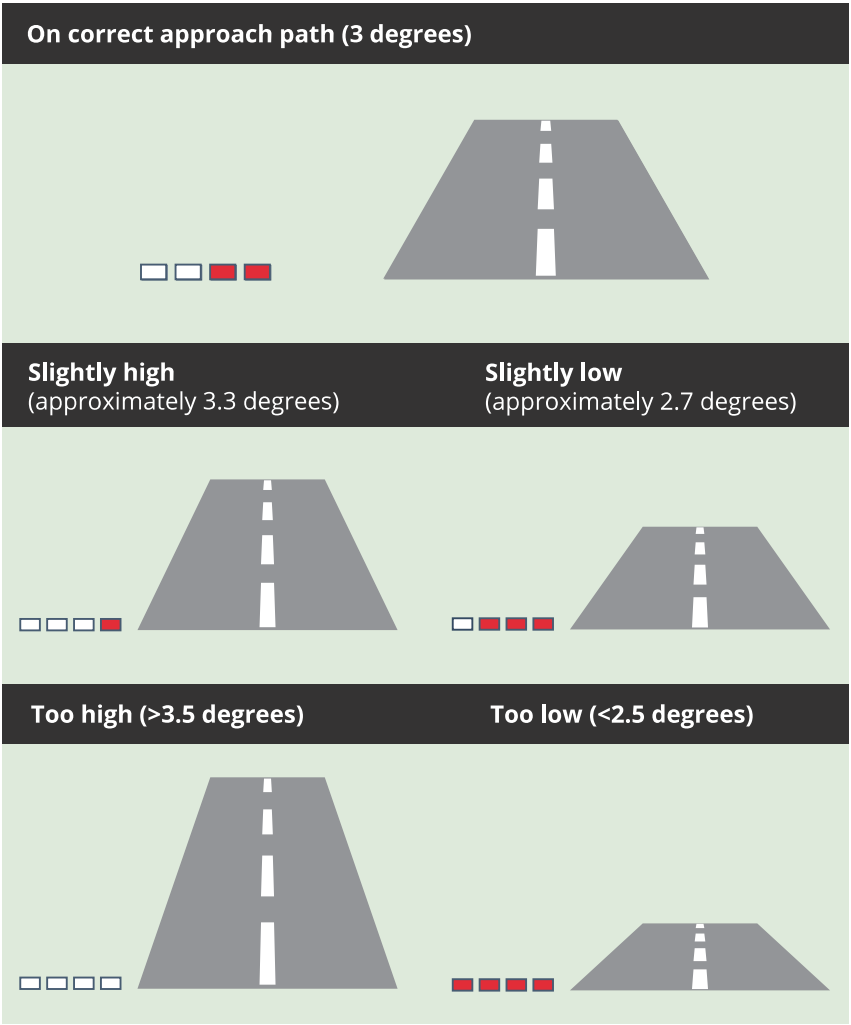
Very high



Very low

Precision approach path indicator (PAPI)

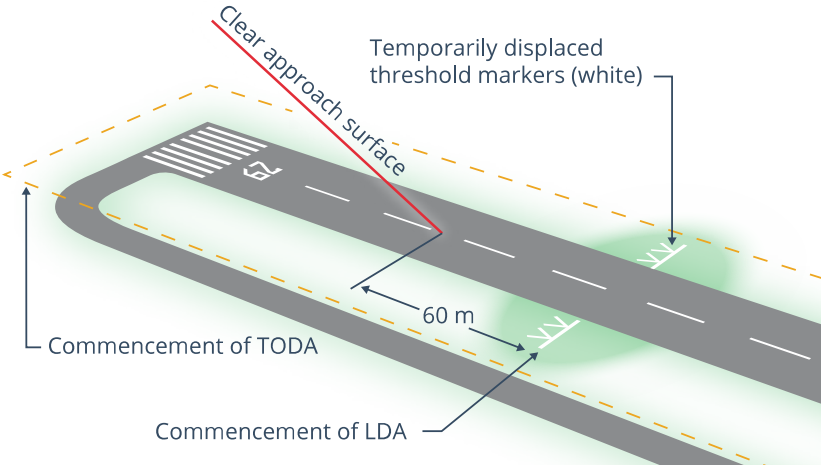
A PAPI installation consists of a set of four light boxes placed in a line at right angles to the runway, abeam the touchdown point, and usually on the left-hand side. Each box radiates both red and white light. The transition between the red and white will appear instantaneous to you (three minutes of arc); however, light changes between adjacent boxes will not occur unless the approach slope changes by about 0.25 degrees. A one-degree progressive incremental spread from the outermost to the innermost light unit about the standard approach angle provides the visual guide shown below.



Displaced threshold (AIP AD)

Pilots should be aware that for various reasons the runway threshold can be displaced. These will be indicated by NOTAMS. At controlled aerodromes, the displaced threshold will be notified by Automatic terminal information service (ATIS).

Figure: Markings for a temporarily displaced threshold due to obstacle infringement of approach surface for a period of 30 days or less



TODA: take-off distance available
LDA: landing distance available

Figure: Markings for a temporarily displaced threshold due to works on the runway for a period of 30 days or less

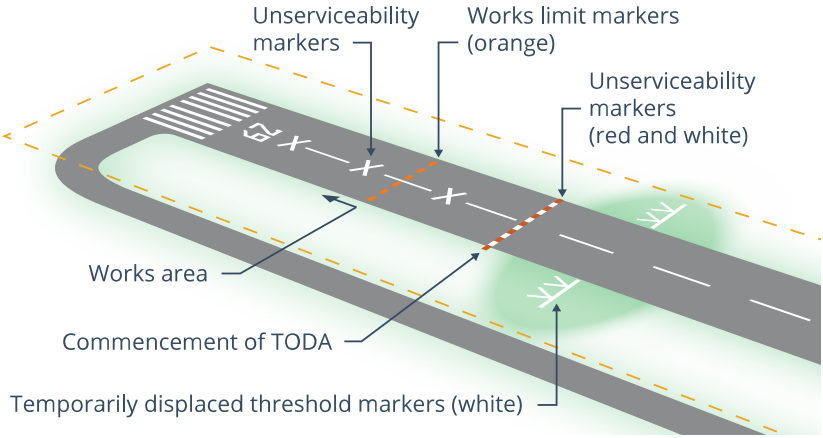


Figure: Markings for a temporarily displaced threshold due to obstacle infringement of the approach path for a period in excess of 30 days

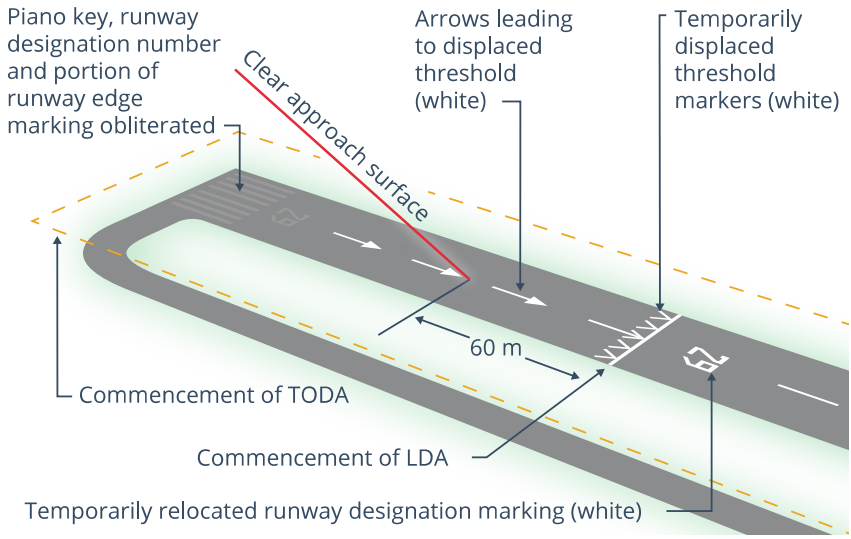
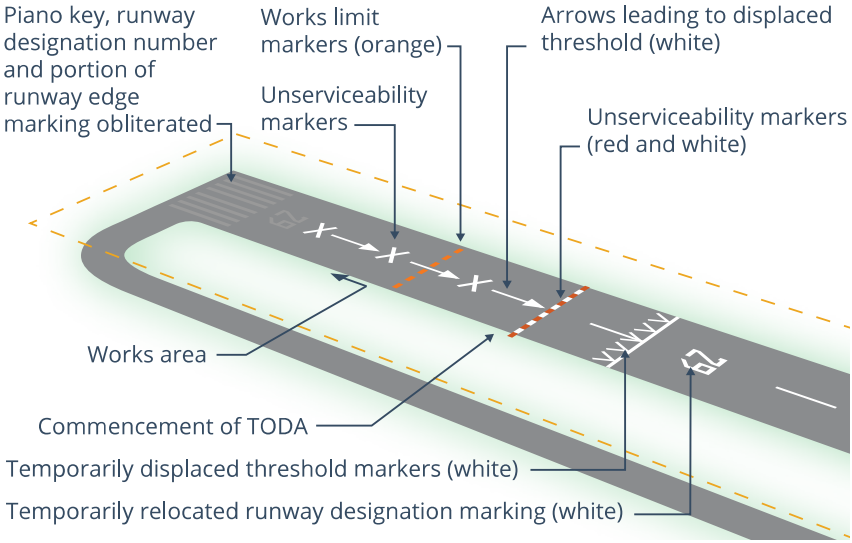


Figure: Markings for a temporarily displaced threshold due to works on the runway for a period in excess of 30 days



Accidents and incidents (AIP ENR 1.14)

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The bureau is managed by a commission and is entirely separate from the transport regulators, policy makers and service providers.

The ATSB is established under the *Transport Safety Investigation Act 2003* (TSI Act) and conducts its investigations in accordance with the provisions of the Act. The TSI Act provides guidance for the investigation of all civil aviation occurrences within Australian territory and for all occurrences involving civil registered Australian aircraft outside Australian territory.

Enquiries

Australian Transport Safety Bureau,
PO Box 967, Civic Square ACT 2608
t:1800 020 616 **e:** atsbinfo@atsb.gov.au
w: atsb.gov.au

Reporting to the ATSB

The items which a pilot must report are listed as either immediately reportable matters (IRMs) or routinely reportable matters (RRMs). A pilot is not required to report to the ATSB if they have reasonable grounds to believe another responsible person e.g. ATC, aircraft or aerodrome operator, or licensed aircraft maintenance engineer (LAME) has reported the occurrence.

Mandatory reporting – immediately reportable matters

IRMs are accidents and serious incidents that affect the safety of aircraft. These include matters involving death, serious injury or destruction or damage to the aircraft or to other property caused by the aircraft. IRMs must be reported to a nominated official by a responsible person as soon as reasonably practical. Immediate reporting of IRMs is required under the TSI Act so that investigators can act quickly to preserve valuable evidence to determine the critical factors underlying serious occurrences.

Examples of an IRM include:

- a death or serious injury to a person caused by contact with an aircraft, aircraft component or jet blast
- an aircraft believed missing
- an aircraft suffering damage, or reasonable grounds existing for believing so
- a breakdown of separation standards (vertical, lateral or longitudinal) in a control area (CTA).

Mandatory reporting – routinely reportable matters

RRMs are occurrences that have, or could have, affected safety, but the outcome was not serious. RRMs would involve non-serious injuries, minor aircraft damage or structural failure that does not significantly affect structural integrity, performance or flight characteristics and does not require major repair or replacement of affected components. Under the TSI Act, a responsible person must report RRMs within 72 hours of becoming aware of them.

Examples of an RRM include (AIP ENR 1.14):

- an injury, other than a serious injury, to a person on board the aircraft
- a flight crew member becoming incapacitated while operating the aircraft
- the unexpected close proximity of aircraft in flight known colloquially as an airprox or near miss
- an occurrence that results in difficulty controlling the aircraft, including any of the following:
  - an aircraft system failure
  - a weather phenomenon
  - operation outside the aircraft's approved flight envelope
- fuel exhaustion (For air transport operations this event is an IRM.)
- the aircraft's supply of useable fuel becoming so low (whether or not as a result of fuel starvation) that the safety of the aircraft is compromised (For air transport operations this event is an IRM if an emergency has been declared.)
- a collision with an animal, or a bird, on a certified aerodrome.

Mandatory reporting – contacting and submitting a report to the ATSB for immediately reportable matters (IRMs)

(CASR 91.606)

IRMs require immediate (as soon as practical) reporting by telephone and then a follow-up written report within 72 hours, preferably using the air safety incident report (ASIR) format.

RRMs only require a written report to be submitted within 72 hours.

Reporting

Australian Transport Safety Bureau
PO Box 967 Civic Square ACT 2608
Incident reporting hotline **t: 1800 011 034**
To submit an online form: **atsb.gov.au/mandatory/asair-form**

What to include in the report?

These are outlined under AIP ENR 1.14 or go to **airservicesaustralia.com/aip/aip**

The minimum information required for a written report includes:

- aircraft make, model and registration
- names of the owner and operator
- full name of the pilot in command
- date and time of the occurrence
- last point of departure, point of intended landing and nature of the flight
- location of the occurrence
- number of persons on board and numbers and names of any injured persons
- nature and cause of the occurrence, as far as it is known
- description of any damage to the aircraft
- description of an accident site's terrain and its accessibility.

Voluntary reporting – aviation confidential reporting scheme (REPCON)

REPCON is a reporting system that allows people to submit reports to the ATSB in confidence. Maintaining individual confidentiality is the primary element of REPCON so as to, for example, alleviate the risk of any retribution. Any person who has an aviation safety concern, whether involved in the aviation industry or a member of the travelling public, may submit a REPCON report.

Items that are not reportable under the mandatory reportable scheme (i.e. are not IRMs or RRMs) but still give rise to aviation safety-related concerns, should be reported with REPCON.

Examples of what should be reported with REPCON include:

- an incident or circumstance that affects, or has the potential to affect, an aircraft's safe operation
- a procedure, practice or condition that a reasonable person would consider endangers, or, if not corrected, would endanger, the safety of air navigation or aircraft operations, in relation to such things as:
  - practices of aircraft operators, aerodrome operators or ATC service providers
  - poor training, behaviour or attitudes
  - insufficient qualifications or experience of employees
- scheduling or rostering that contributes to the fatigue of employees and/or
- bypassing safety procedures because of operational or commercial pressures in relation to:
  - inadequate aerodrome facilities for safe operations
  - unsafe passenger, baggage or cargo management
  - inadequate traffic or weather information.

REPCON reporting

If you have any concerns, please contact REPCON confidential reporting:
t:1800 020 505 or submit an online form
w: atsb.gov.au/voluntary/repcon-aviation.aspx